

A NOTE ON TROPISMS IN *PLEA STRIOLA* FIEBER.

BY LEONARD B. CLARK, University of Manitoba.

While collecting at St. Norbert, Manitoba, in the summer of 1924, I had the good fortune to take thirteen specimens of the diminutive back-swimmer, *Plea striola* Fieb. At that time I was investigating the light reactions of *Notonecta undulata* Say and thought it would be of interest to compare the two in this respect.

P. striola has been recorded from widely different parts of America. It has been listed locally only from Como, Quebec in Canada, and from the states of New York, New Jersey, Florida, California, Massachusetts, Texas, Iowa, Illinois and Kansas in the United States. The paucity of the records has, very likely, been due to its more or less superficial resemblance to some of the small crustaceans which abound in the water it inhabits. Hungerford found that it feeds upon these small Crustacea, grasping the prey in the basket formed by its fore-limbs and rolling the victim about until the stylets of the back-swimmer locate a vulnerable point. Heinrich Wefelscheid made a close study of an European form, *P. minutissima* Leach in "Ueber die Biologie und Anatomie von *Plea minutissima* Leach. 1912" and most of our knowledge comes from the above work. He found that this form fed on the juices of the plants found in its habitat.

The bugs spend much time among the tangles of *Chara*, *Elodea*, *Myriophyllum* and the other aquatic plants in the neighborhood of which they are generally found. They, like *N. undulata*, are positively thigmotactic, but to a much greater degree. The body is pressed more or less closely to the stem or leaves to which they cling, while *N. undulata* seldom has any part of its body touching its support but grasps this with the two anterior pairs of legs.

The phototropism of *P. striola* was studied in an aquarium kept at a temperature of 21° C. and with a light at each end, one of 123 C. P. and the other of 35 C. P. The aquarium at first contained only water. Every five minutes the lights were reversed and the number of bugs at each end were counted. The results show that out of a series of ten trials, an average of 8.6 individuals went to the strong light, while an average of 4.4 individuals went to the weaker light or moved at random. This shows that *P. striola* is positively phototropic.

Both temperature and the thigmotactic response will modify their positive phototaxis. Thus by placing a bunch of *Myriophyllum* in the center of the aquarium and leaving it there for fifteen minutes until the animals are clinging to it, they give, on repeating the experiment with ten trials, an average of 2.6 bugs at the end of the greatest intensity to .4 bugs at the opposite end. This shows that over fifty per cent. of the *Plea*, after coming to rest against the stems of the plants, are not moved by the light stimulus under these conditions.

However, a similar experiment was again carried out, but at a temperature of 35° C. Twelve specimens were used. They averaged, on ten trials, 11.2 at the light of 123 C. P. to .1 at the light of 35 C. P. In the first three trials, 3, 2, and 1 bugs still clung to the vegetation. At this temperature all the back-swimmers were very active, running up and down the plant and swimming about it. When the lights were turned on, the bugs were wildly phototactic, crowding to the stronger light and remaining there. The rise in temperature decreased their thigmotactic response, while increasing their reaction to light.

The difference in behavior between *P. striola* and *N. undulata* to light appears to be a question of the relative degree in which thigmotaxis and phototaxis predominates in their behavior. In the former, the reaction to contact is much stronger than in the latter, while the reaction to light is more powerful in *N. undulata*. Temperature modifies both insects in the same way, namely, by increasing their phototropic and decreasing their thigmotactic responses.

Errata in Vol. XIX: Microveliae of the Western World.

P. 187, line 21, for "paomensis" read "panamensis."

P. 191, antennal formula for *albonotata* Champion should read:

II: I: III: IV.